SUPP. DOC. #3

State of California
Regional Water Quality Control Board
San Diego Region

Item No. 11

November 12, 2003
Regional Board Meeting

Staff Report

For

Tentative Addendum No. 1 to Cease and Desist Order No. 2001-198

California Department of Transportation
San Joaquin Hills Transportation Corridor (SR-73)

Prepared by
Christopher Means, Northern Watershed Protection Unit

Staff Recommendation

The adoption of tentative Addendum No. 1 to Cease and Desist Order No. 2001-198, California Department of Transportation, San Joaquin Hills Transportation Corridor (SR-73) is recommended.

Background

The San Joaquin Hills Transportation Corridor, State Route 73 (SR-73), a toll road, was designed and constructed by the Transportation Corridor Agency (TCA) and extends from Newport Beach southeast to San Juan Capistrano, connecting I-405 to the I-5. SR-73 is within the jurisdictions of both the Santa Ana and San Diego Regional Water Quality Control Boards. SR-73 crosses through the Aliso (901.13), Laguna Beach (901.12) and Oso (901.21) hydrologic sub areas within the jurisdiction of the SDRWQCB. Caltrans accepted responsibility for the operation and maintenance of SR-73 during a period of time between July 24, 1996 and the completion of the Toll Road in November 1996. The addition of SR-73 to the State Highway System allows Caltrans to own and maintain SR-73 as they do all other components of the highway system.

The final Environmental Impact Statement for the construction of SR-73 contained a water quality mitigation measure requiring the development of a Runoff Management Plan (RMP) to address highway runoff. As an element of the RMP, TCA installed 39 Compost Stormwater Filter (CSF) units along SR-73. Twenty of these systems are within the jurisdiction of the San Diego Regional Board.

Compost Storm Water Filters (CSF units)

The CSF unit is a proprietary treatment system, which consists of an open, concrete box that is divided into several cells that contain a granulated compost filter media. Storm water flow from SR-73 is collected in detention basins, and then passes into an inlet bay at one end of the CSF, spills over a weir into the first cell, and filters through an 18-inch thick layer of compost. The remaining cells within the unit are designed to receive and treat runoff from the first cell during larger storm events. The CSF unit design was intended to accommodate flow from a 25-year storm event. At the time of their installation these CSF units were considered to be on the cutting edge of stormwater treatment technology. The "open" unit CSF designed for SR-73 is no longer manufactured or sold. Constant plugging of the units from sediment deposition on the surface of the media plagued this design. The manufacturer has since upgraded the system design to an enclosed vault with filter media canisters.

Cease and Desist Order No. 2001-198

Responding to a complaint from the City of Laguna Beach, the Regional Board inspected two of these CSF units on December 21, 2000. The two units inspected were found to be in a state of disrepair. Weir plates were broken, vegetation was growing in the media, and a sediment layer over the media was evident.

In response to a request from the Regional Board, Caltrans subsequently submitted a technical report, which provided an assessment of the condition of the CSF units. The report concluded that ninety percent (90%) of the forty CSF units were not operational in their current condition.

After review of the technical report provided by Caltrans, the Regional Board concluded that Caltrans had failed to use reasonable care to properly operate and maintain the SR-73 structural treatment BMPs (i.e., CSF units), and adopted Cease and Desist Order No. 2001-198 (CDO) at the July 18, 2001 Regional Board hearing. The CDO required Caltrans to:

1. Immediately begin corrective actions on the structural treatment BMPs (CSF units) associated with SR-73.
2. Submit a time schedule by August 31,2001for the repairs to structural BMPs, or replacement with a suitable alternative.
3. Immediately implement an inspection and maintenance program for the CSF units and detention basins.
4. Develop and implement a monitoring program to:
    a. Determine the quality of runoff generated by SR-73.
    b. Determine effectiveness of the structural treatment BMPs associated with SR-73.
    c. Determine if the CSF units were exporting excess nutrients and impairing receiving water quality.

On August 31, 2001, Caltrans submitted a tentative corrective action plan that proposed a site-specific schedule to first repair and maintain the existing CSF units, and in a phased operation, replace them with alternative treatment structures. The proposed schedule included replacement of every CSF unit deployed on SR-73, including those within the jurisdiction of the Santa Ana Regional Board.

On October 31, 2001, Caltrans submitted and began implementation of a water quality monitoring program meeting the requirements of Directive No. 4 of the CDO. Caltrans has monitored three CSF units (one in each of the Aliso, Laguna Canyon and Oso hydrologic sub-areas) and their related basins for the last two rainy seasons. Caltrans has provided the Regional Board with two annual monitoring reports as required by the CDO.

Since adoption of the CDO, Caltrans has been timely and complete in their responses to the directives contained in the CDO.

Caltrans Request for Modification of Cease and Desist Order No. 2001-198

On July 30, 2003, Caltrans submitted their second Annual Monitoring Report requesting that the Regional Board determine that the previous two years of monitoring have fulfilled the goals of Directive No 4 of the CDO. Caltrans concluded that the CSF units were exporting nutrients and have not functioned as effective treatment BMPs for highway runoff.

Summary of Monitoring Data

The first goal of Directive No. 4 of the CDO was to determine the quality of runoff being generated by SR-73. Caltrans collected seventy-four grab samples and eighty one composite samples from six monitoring stations during the two year monitoring period. Samples were analyzed for the Caltrans standard suite of constituents, in addition to those specified in the CDO. Analytes included conventional analytes (TSS, TDS, TOC, DOC, Hardness, pH, Conductance), nutrients (nitrate, nitrite, ammonia, TKN, total and dissolved phosphorous, dissolved orthophosphate), total and dissolved metals (As, Cd, Cr, Cu, Pb, Ni, Zn), oil and grease, PAH's, and total and fecal coliform.

These results were used as a baseline to compare pollutant removal/export of the CSF units and their associated flow equalization basins. A comparison of SR-73 data with the results of the *Caltrans Statewide Stormwater Runoff Characterization Study 2001-2002 Study* findings did not show any indication that the quality of runoff from SR-73 differed significantly with runoff generated from other Southern California highways.

The second goal of Directive No. 4 of the CDO was to determine the ability of the CSF units and their associated basins to remove pollutants of concern. A review of the monitoring data for the last two years showed that nitrate concentrations increased through the CSF unit at each of the three monitoring sites. The pollutant removal results for the other constituents did not show consistent increase or decrease in concentration through the CSF units. Results of the monitoring seem to indicate that the flow equalization basins provided greater overall reduction in concentration of most pollutants, as compared with the CSF units.

The third and final goal of Directive No. 4 of the CDO was to determine if the CSF units were exporting excess nutrients and impairing receiving water quality. Results of the visual inspection of the receiving waters for periphyton growth, color, turbidity, and odor, in addition to quantitative nutrient analyses, indicated that while the CSF units exported nutrients, there were no visual indications that the discharge impaired the water quality and beneficial uses of receiving waters associated with SR-73.

Replacement of CSF units with Alternative Structural Treatment BMPs

Caltrans has begun implementation of its proposed plan to replace the CSF units with suitable alternative treatment BMPs. Due to budgeting issues, project complexity and other regulatory constraints, this process will be a phased replacement of the units. The types of structural BMPs to be deployed were based on each site layout and hydrology. CSF units not under construction will continue to be monitored. Seven CSF units will be replaced with Caltrans Storm Water Management Plan (SWMP) detention basins. Ten other CSF units will be replaced with a modification of an extended detention basin. These modifications will include alternative inlets and outlets, skimmers, and chemical treatment to promote sediment settling. The three remaining CSF units will be replaced with a combined detention/filtration basin, a gross solids removal device (GRSD), and a wet basin.

After the completion of construction of the alternative treatment devices, all devices other than the seven SWMP approved detention basins will be monitored for effectiveness as part of Caltrans' ongoing *BMP Retrofit Pilot Study.* The goal of the BMP Retrofit Pilot Study is to determine the cost-effectiveness and water quality benefits of structural Best Management Practices (BMPs) when retrofitted to existing facilities.

As of this date, the first nine CSF units have been removed and are on schedule to have the alternative structural BMPs in place by the winter of 2003. Eight more will be replaced by the winter of 2004. It is estimated that an additional six months would be needed to complete the replacement of all remaining CSF units within the jurisdiction of the San Diego Regional Board.

Tentative Addendum No. 1 to Cease and Desist Order No. 2001-198

In response to Caltrans July 30, 2003 letter, and after a review of the July 31, 2003 Quarterly Progress Report, and Annual Monitoring Report, staff prepared tentative Addendum No. 1 to Cease and Desist Order 2001-198. This addendum will:

1. Rescind the monitoring requirements contained in Directive N. 4 of the CDO.

2. Establish a final deadline of June 1, 2005 to complete removal of the CSF units and the installation of alternative structural BMPs.

The monitoring data to date has adequately met the goals of Directive No. 4 of the CDO, and further monitoring of the CSF units would not provide any additional useful information. Rescission of the monitoring requirements is appropriate due to the fact that the two years of monitoring data has shown that the CSF units do not work up to original design expectations.

The final compliance date of June 1, 2005 to replace all CSF units with alternative BMPs is reasonable due to budgetary necessities, project complexity, and the environmental regulatory process involved in the replacement of the CSF units. It is expected that the alternative BMPs being implemented will be more consistent and effective in their pollutant removal efficiencies, and will be more cost efficient and less costly to maintain. The continued monitoring of the alternative BMPs through the *BMP Retrofit Pilot studies* will aid in the advancement of our understanding of highway runoff pollutant treatment, which could have statewide applicability in the future.